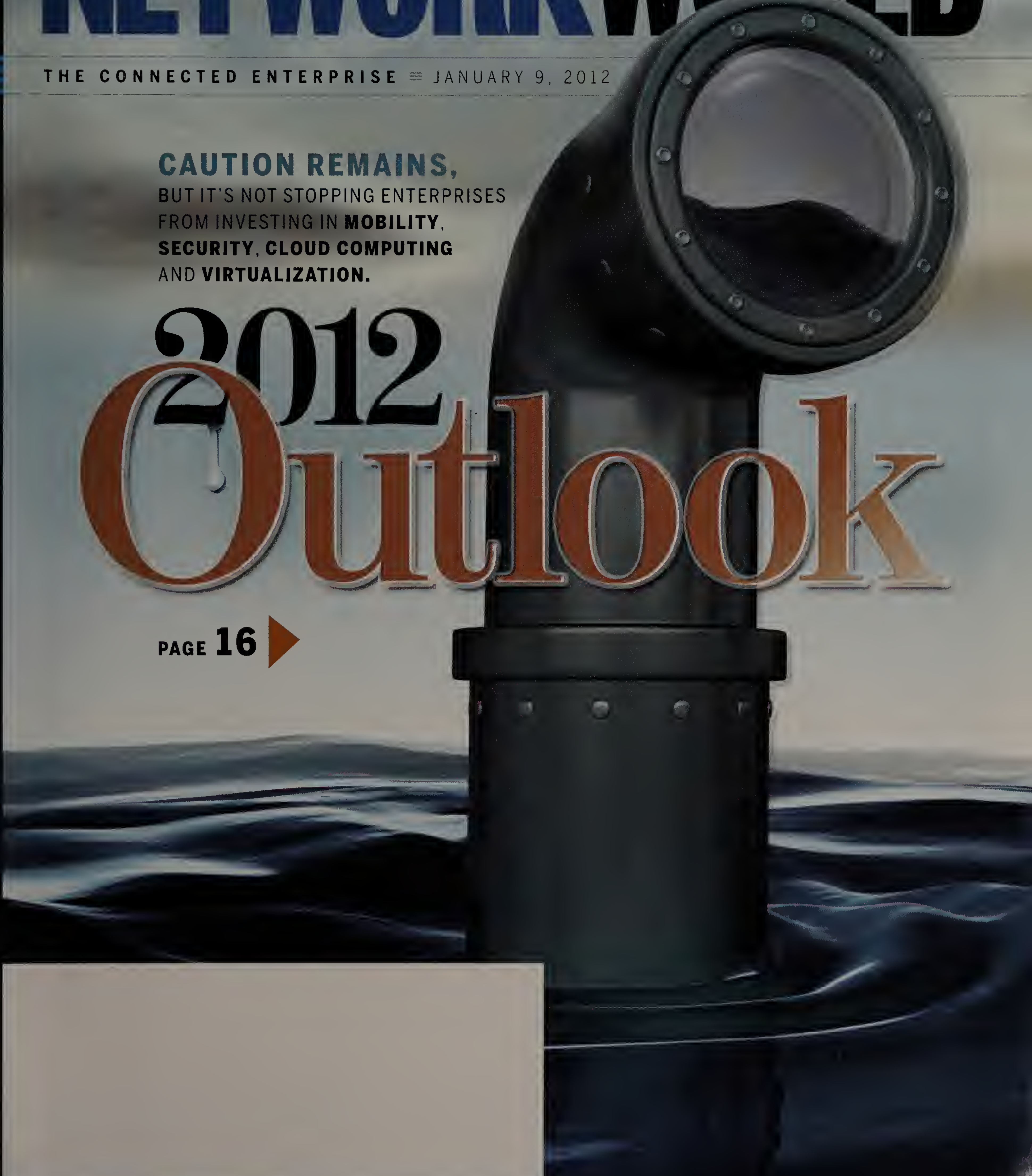
VOLUME 29 NUMBER 1 $5.00

NETWORKWORLD

THE CONNECTED ENTERPRISE JANUARY 9, 2012

CAUTION REMAINS, BUT IT'S NOT STOPPING ENTERPRISES FROM INVESTING IN **MOBILITY**, **SECURITY**, **CLOUD COMPUTING** AND **VIRTUALIZATION.**



2012 Outlook

PAGE 16

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FROM THE EDITOR
JOHN DIX

Bang for your IT buck

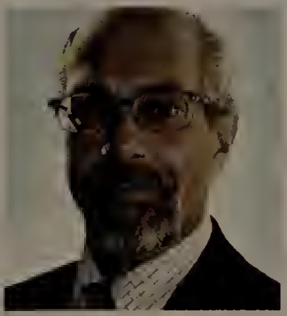
By all accounts the economy is stronger now than it was 12 months ago. It is also clear that companies are still moving cautiously, and for the bulk of IT that means continuing to do more with what you have, which is at least better than doing more with less.

According to *Network World* research, some 20% of IT shops got budget increases for 2012, while 39% are operating with the same funding they had last year (and presumably being asked to make those funds do more here in the new year). An unlucky 15% had budget cuts and, when the research was fielded last fall, 26% were still uncertain where their budget would end up.

The good news, of course, is there is a boatload of new technologies that can, in fact, help make IT more efficient, everything from cloud computing to virtualization techs that let you safely enable use of personal techs in the enterprise. The trick is figuring out how to incrementally embrace all of the new as you break free of the bonds of your highly optimized legacy stacks.

No mean trick. But if this stuff was easy it wouldn't be so important.

Happy New Year.



John A. Dix

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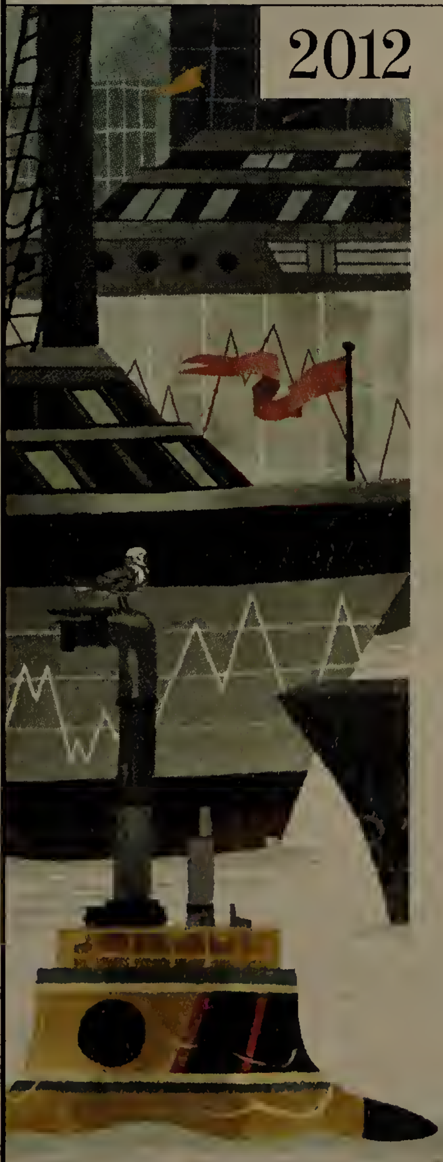

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peersay

BYOD in 2012

GREAT HEADLINE. SCARY words like "minefield" and "bedevil." But the real story is the opportunity that BYOD provides to empower individuals in organizations, and provide significant improvement in business processes and engagement to users (Re: "Security minefield: 'Bring your own device' will bedevil IT security in 2012"; page 22).

It's unfortunate that we're still focusing on the "fear factor" with BYOD, and not on the opportunity that access to apps and data provides. The question should not be, "How would you lock down the phone?" but, "How can I encourage, and enable my employees and partners to leverage their mobile phones and tablets — with reasonable security?"

Cimarron Buser

Going 'paperless'

AS LONG AS there are bureaucracies, and their endless requirements to provide physical proofs for bureaucratic compliance, few of which trust that new-fangled document imaging technologies are trustworthy, there will be a need for continued paper records accumulation (Re: "Survey shows we need a better definition of paperless"; tinyurl.com/7nnaa69).

First step, eliminate the bureaucracies. That alone would be a noble cause.

Rick 762

I COULD SEE a day where most books, documents and newspapers are all digital. But I never see artists giving up there sketchbooks. And would a diploma seem as legitimate if it were but a JPEG? And even if every bathroom had a bidet tomorrow, we would still buy tissue to blow our noses.

tomsans

Low pay, no perks

EMPLOYEES ARE NO longer loyal to companies, because companies are no longer loyal to employees. If there is a crunch and shareholder value goes down, it is not the C-level management salaries that get slashed, but the bottom that gets cut down (Re: "The CIO's lament: 20-something techies who quit after 1 year"; tinyurl.com/c23sctz).

Maybe it is time to look at compensation, benefits and work environment if you have high turnover.

Ramon S

NOW THAT I'M over 40 and have been working in IT since I was in my early 20s I see real producers increasingly being rewarded with more work and less pay. I cheer these young people in their choice to go where they are rewarded either monetarily or with other incentives.

The management level is so far disconnected on what motivates the younger workforce today. Old ways of thinking need to be replaced with more creativity. If you don't really have the money to be competitive financially, offer another incentive. Just don't ignore the people that make your company run.

rcangler

> Employees are no longer loyal to companies, because **companies are no longer loyal to employees.**

VDI outlook

VDI HAS A long way to go to get anywhere near the cost of a desktop deployment. Take a 15,000 seat deployment with VDI. Since VDI runs about 30 users per server, it would take 500 servers for 15,000 users plus a significant amount of high speed storage. The capex for the servers and storage is approximately $3.5 million. Also, it is approximately $800 per server per year for power and cooling of a server. Without even counting the power and cooling for all the storage and network gear, this equates to $400,000 per year in power and cooling costs (Re: "Virtual desktops set sail"; Page 28). You can still get all the manageability benefits that VDI provides by centralizing images and doing single image management, but running the images locally on a PC. Offloading the compute power to the endpoints reduces the cost of the infrastructure and the cost to run the infrastructure.

Barry Phillipss

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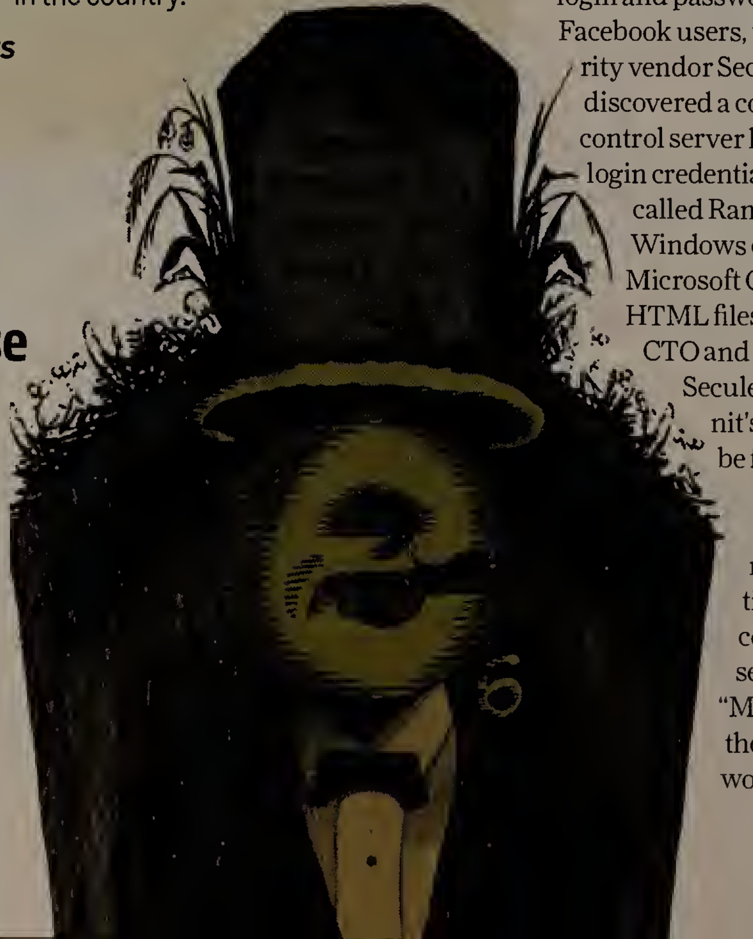
U.S. State Department investigating Huawei on Iran concerns

THE U.S. DEPARTMENT of State is investigating Huawei Technologies for allegedly providing censorship and mobile phone tracking technology to Iran, following a request from six U.S. lawmakers. The allegations arose after a report published in October linked Huawei's export of technology to Iran with the country's suppression of dissidents. The Department of State "shares the concern of any potential export of technology to Iran that is to be used specifically to disrupt, monitor or suppress communication of the people of Iran," said department spokeswoman Beth Gosselin in a statement. Huawei, based in Shenzhen, China, has said the company's business has been in strict compliance with all relevant international and local laws. "Unfortunately, a few members of Congress continue to cite inaccurate media reports that include groundless allegations and inaccuracies," the company said in a statement. In December, Huawei announced it would restrict its business activities in Iran and no longer seek new customers, citing the "increasingly complex situation" in the country. ***tinyurl.com/7djagrs***

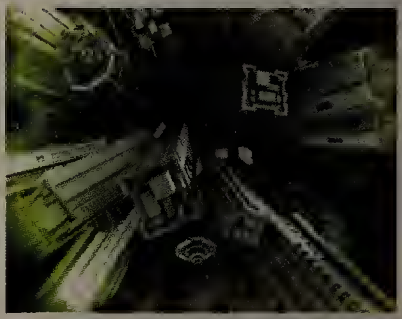
Microsoft declares demise of IE6 in U.S.

MICROSOFT SAYS its campaign to drive Internet Explorer 6 into extinction has done its job in the U.S., where just 0.94% of users ran IE6 in December — a new low for the browser that debuted in 2001. To celebrate, Microsoft posted a photograph of a cake frosted with the phrase, "Goodbye IE6!" "IE6 has been the punch line of browser jokes for a while, and we've been as eager as anyone to see it go away," said Roger Capriotti, Microsoft's head of IE marketing, in a blog post. Most of the remaining copies of IE6 are run by Chinese users of Windows, said Microsoft. Almost one-in-four Chinese PCs used IE6 to access the Internet in December, while Chinese users accounted for 58% of all copies of IE6 run worldwide that month. Experts have linked the higher rate of IE6 use in China to the country's reliance on Windows XP (which included IE6) and its reputation as a haven for software piracy. ***tinyurl.com/6sg2zms***



Ramnit worm goes after Facebook credentials

A PERVASIVE worm has expanded its reach to now steal login and password details for Facebook users, warned security vendor Seculert, which discovered a command-and-control server holding 45,000 login credentials. The worm, called Ramnit, infects Windows executables, Microsoft Office and HTML files. Aviv Raff, CTO and cofounder of Seculert, said Ramnit's authors may be finding that attacking social networks is a more productive way to collect people's sensitive data. "Many users use the same password for Facebook and other organization web services, such as SSL VPN or Outlook Web Access," Raff said. "The attackers may use this to gain remote access to corporate networks. Same goes for their online bank account." ***tinyurl.com/6uc782n***



Leaving money on the table

IT DEPARTMENTS are missing out on power consumption savings because they're afraid PC power management (PCPM) solutions could disrupt core IT operations, according to Ovum. The research firm assessed 11 leading PCPM products, including those from 1E, Dell KACE, IBM, Lumension and Verismic, and found organizations can achieve average power consumption savings of up to 40%, or $36 per PC per year. Mistrust of these solutions is misplaced, said Ovum analyst Rhonda Ascierto. "None of the power-management solutions we review in this report disrupts maintenance or other IT processes." ***tinyurl.com/7u76pol***

Gartner chops IT spending forecast

GARTNER HAS lowered its 2012 IT spending forecast, with spending expected to rise only 3.7%, rather than the previous forecast of 4.6% growth. Global IT spending in 2012 will now total $3.8 trillion, the research firm said. "Faltering global

MICROSOFT IE6 ART: ATENDESIGNGROUP.COM

Ray Ozzie reemerges with startup Cocomo

creator and former Microsoft Chief Software Architect Ray Ozzie is coming back with a startup named Cocomo that seems to be focused on mobile communication. After waiting out his non-compete agreement with Microsoft that expired at the end of 2011, Ozzie last week opened a Twitter account (@ rozzie), where a job posting indicates the company is looking to hire a user experience/user interface designer. The job posting contains hints that the product will deal with mobile devices — phones and tablets -- based on iOS and Android, and says "a handful of us are just starting work on a new communications product for this new world. . . . We aspire to deliver compelling tools for social interaction that people will use, value and love." The word Cocomo is shorthand for constructive cost model, which is a way to estimate the cost of software development projects. *tinyurl.com/79ambq3*

economic growth, the eurozone crisis, and the impact of Thailand's floods on hard-disk drive production have all taken their toll on the outlook for IT spending," Gartner Vice President Richard Gordon said. Hardware spending in 2012 is expected to grow 5.1% to $424 billion, while enterprise software revenues will increase 6.4% to $285 billion. Telecom equipment will see the strongest growth, rising 6.9% to $475 billion. Telecom services will grow just 2.3% to $1.74 trillion, while IT services revenue will rise 3.1% to $874 billion. ***tinyurl.com/6rnlmto***

Microsoft patched dangerous web flaw in double time

JUST BEFORE the New Year rang in, Microsoft issued an out-of-band fix for a vulnerability in its ASP.NET web platform that could allow an attacker to launch a successful denial-of-service attack on a server using nothing more sophisticated than a stream of 100kb files. Although not yet being exploited in the wild, Microsoft decided the potential for trouble was sufficient to warrant its only standalone fix for the whole of 2011 — breaking what would have been a perfect record for Microsoft's 2011 patch schedule. The flaw was put into the public domain on Dec. 28 by researchers Alexander Klink and Julian Wlde, about a month after they informed Microsoft itself, which has garnered Microsoft some praise from researchers for a rapid response. "We consider Microsoft's reaction and implementation speed outstanding, as they were only notified at the tail end of the German security researchers' work," said Qualys CTO, Wolfgang Kandek. ***tinyurl.com/7rrqy3t***

GOOD BAD UGLY

good

Yay for Yahoo!

YAHOO'S BOARD has chosen as the company's CEO Scott Thompson, president of eBay's PayPal, ending a four-month search after Carol Bartz was fired in early September. Tim Morse, Yahoo's interim CEO, will now go back full-time to his CFO role, the company said in a statement. Under Thompson's leadership, PayPal has in recent years become a stellar business for eBay, driving much of the company's revenue growth, as the core eBay e-marketplace has hit a plateau.

bad

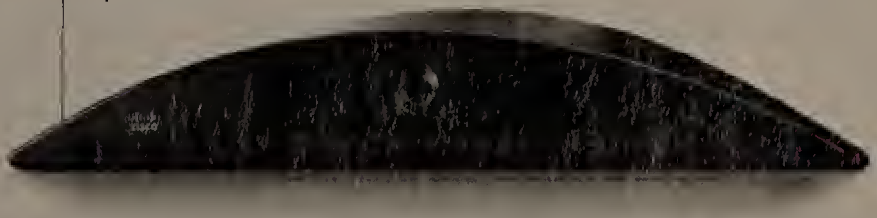
Google whips itself over Chrome debacle

GOOGLE KNOWS that it's been a very, very bad company. That's why Google has decided to demote its own browser on its search engine results for at least the next two months. As first reported by Search Engine Land, searching for "browser" on Google no longer retrieves a link to Google Chrome until position 50, well after the first pages of the search. Google decided to punish its own browser's search rankings after the company was caught violating its own standards not using the "nofollow" code tag for sponsored links that promote the Chrome browser.

ugly

Cisco's Umi still dead. Really, really dead

CISCO'S UMI consumer TelePresence product really is dead — a fact the company had to reiterate to a disbelieving public this week even though it had telegraphed the move back in April. Back then, Cisco said it was shifting the expensive, unpopular and ultimately ill-fated high-def consumer webcam to its business video and collaboration unit as it gutted its consumer business and killed the very popular Flip pocket videocam. Then in October, a Cisco official told IDG News Service that the product was indeed discontinued. Last week, *Network World* blogger Larry Chaffin confirmed that Umi was pulled from the shelves of retailers and that Cisco had indeed quietly and unceremoniously buried the product and moved on.



Passwords aren't dead but they need fixing

BY TIM GREENE

PASSWORD USE needs an overhaul that is driven not by guesswork but by actually understanding the real damage that can be done when password security is compromised, according to a Microsoft researcher.

While many call for replacing passwords altogether with something else, they may be doing so based on little or no hard evidence, says Cormac Herley, a principal researcher at Microsoft Research.

Keystroke logging, brute force attacks, phishing and session hijacking are all used to get around passwords, but it would be impossible to draw a pie chart of how much each method is used because nobody knows, he says in a paper on the subject. "We don't know the slice sizes — not even approximately," he says.

In addition to finding out, he recommends other steps that could make password use more effective:

- Quantify harm that password compromise causes and differentiate between the worst case and the average case.
- Offer better user support for passwords so password use is more secure.
- Identify when passwords are not enough — and why — so appropriate alternatives can be developed.
- Devise a method for evaluating alternatives objectively.

Herley's premise is that passwords are so entrenched and are useful in so many ways that they're not going away anytime soon. After all, if they were totally ineffective, nobody would use them.

"While the research community is unable to quantify harm, individual companies presumably have estimates of their losses from ongoing threats," Herley says in the paper "A Research Agenda Acknowledging the Persistence of Passwords," co-authored by Paul C. van Oorschot, a professor of computer science at Carleton University. "Their actions currently reveal a preference for password-related losses as opposed to the uncertainty of alternatives."

Passwords have a lot of upsides — they're free, allow access from any machine with a browser, revoking them is simple and it's easy for users who forget them to reset them — that make it hard to dump them altogether. "No single alternative technology is likely to possess the combination of security, usability and economic features that meets all goals in all situations," Herley says.

He also takes the side of end users who are often criticized for creating weak passwords, reusing them and writing them down where they can be compromised.

A set of strong unique passwords to protect different sites and applications creates extra work for users that may be unwarranted, he says. "Without better user-facing support, passwords represent a growing burden of user effort that is better spent elsewhere," he says.

Password support often consists of information on how to choose strong passwords and on how to recognize phishing, admonishments to check URLs carefully, and to fend off keystroke loggers with antivirus software and updated software patching. "Thus, they receive, it appears, the advice that is most easily given, rather than the advice that addresses the harms they actually face," Herley writes. ■

3 tips for securing enterprise passwords

1. Recommend use of long passphrases as a way for users to recall passwords without writing them down.
2. Reject passwords listed in password dictionary-attack tools and ones that use keyboard sequences (qwerty, 12345, etc.).
3. Salt hashed passwords to increase the difficulty of breaking them.

Windows 8 can scrub data from disk, but not up to tough security specs

Windows 8 includes a reset function that restores the operating system to a clean state and scrubs data applications from the disk, but falls short of making that data unrecoverable, according to Microsoft.

The operating system, now available as a developer's preview, can also refresh itself, restoring the operating system to its original state while also saving data and applications, according to the Building Windows 8 blog.

When Windows 8 resets itself the data it removes can be erased more thoroughly than in a traditional reformatting of a disk by overwriting every sector, Microsoft's Steven Sinofsky writes. That doesn't mean it can't be recovered, though. "Even if someone removes the drive from your PC, your data will still not be easily recoverable without the use of special equipment that is prohibitively expensive for most people," he says.

He says the optional "thorough" reset adds additional purging steps that limit the effectiveness of recovery attempts. It does not replace "multi-pass scrubbing operations that might be required for regulatory compliance if you are dealing with highly confidential business and government data," he says.

The thorough reset is suitable for scrubbing a machine that is being recycled or donated to a charity because it makes data recovery harder and because it's quick compared to more thorough methods that take hours, Sinofsky says. Reset with Bitlocker disk encryption disabled takes about 24 minutes. With Bitlocker, it takes about six and a half minutes, Sinofsky says.

The refresh option is meant for fixing operating system problems that may arise without risking data already stored on the machine. "The coolest part about Refresh is there's no need to first back up your data to an external hard drive and restore them afterwards," he says.

Refresh is automated to some degree, eliminating the need to run through Windows Welcome screens in order to reinstall the operating system by preserving user accounts and settings as well as account names and passwords. Data and documents appear in the same locations they were before refresh.

— Tim Greene

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5 major changes facing the Internet in 2012

Technical operations, policymaking could change significantly this year

BY CAROLYN DUFFY MARSAN

2012 IS poised to go down in Internet history as one of the most significant 12-month periods from both a technical and policy perspective since the late 1990s, when this network-of-networks stopped being a research project and became an engine of economic growth.

This year the Internet will face several milestones as it undergoes its biggest-ever technical upgrade, from Internet Protocol Version 4 to Version 6. In addition, key contracts that the U.S. federal government controls for Internet infrastructure and operations are being rebid. Taken together, these events could result in monumental changes in both who operates the Internet infrastructure as well as how these operations are handled:

1. The root servers may have a new operator.

The Internet Corporation for Assigned Names and Numbers (ICANN) has overseen the operation of the Internet root servers since the nonprofit was founded in 1998. However, ICANN's contract is due to expire in March, and a new U.S.-based organization could end up in charge of this critical technical function.

The Internet's 13 root server farms are at the top of the DNS hierarchy, which matches domain names with their corresponding IP addresses for looking up websites. The operation of the root server farms is overseen by the Internet Assigned Numbers Authority (IANA), which reports to ICANN.

Instead of renewing ICANN's contract for the IANA function, the U.S. government has opened up the bid to other U.S.-based organizations. On Nov. 10, 2011, the National Telecommunications and Information Administration (NTIA) issued an open bid for the IANA function. Bids were due Dec. 12 and a contract is expected to be awarded in the first quarter of this year. The new contract for the IANA function will last from April 1 of this year until March 31, 2015.

2. A new company could operate the .com registry.

Verisign has operated the .com domain since 1999. The .com domain is the Internet's most popular top-level domain, with about 100 million .com names registered as of last month. To put this figure in perspective, the Internet has a total of 220 million domain names registered in 280 top-level domains. The number of .com names dwarfs every other domain: It's more than five times greater than those registered in the second most popular extension, which is Germany's .de.

Verisign signed an agreement with ICANN on March 1, 2006, to operate .com, and that contract expires on Nov. 30.

One positive indicator for Verisign: In June 2011, ICANN renewed the company's contract to operate the .net registry, which has about 12 million registered names. Verisign will run the .net registry until 2017.

3. Up to 1,000 new top-level domains will start being introduced.

ICANN plans to launch a new program Jan. 12 to add hundreds of generic top-level domains (gTLDs) such as .hotel and .paris to the Internet. This controversial plan has been under discussion for six years, and it is finally scheduled to begin. ICANN's new gTLD program represents the biggest change to the Internet's naming system since 1998, when ICANN was formed.

ICANN has run two previous efforts to expand the Internet domain name space: once in 2000, when it added seven extensions including .biz and .info; and again in 2004, when it added eight more extensions such as .asia and .jobs. None of these new domain name extensions has been particularly successful. However, if ICANN's latest attempt to expand the domain name space succeeds, it could fundamentally change the way domain names are used. Among the new categories of names that are expected to be approved include: internationalized domain names in non-English language scripts; geographically oriented domains for cities and regions; domain names tied to specific interests as well as domain names tied to individual companies and brands.

4. An additional 10,000 websites will support IPv6.

Sept. 30 is the deadline for all U.S. federal government agencies to support IPv6 on their public-facing websites and Web services. An estimated 10,000 websites fall under this mandate, which could help drive IPv6 deployment in the United States during the next 12 months.

Established by the Obama administration two years ago, the federal IPv6 mandate also requires agencies to upgrade internal client applications that communicate with public Internet servers to use native IPv6. But agencies have another two years — until September 2014 — to meet this second deadline. Federal agencies are required to designate an IPv6 transition manager and to purchase network hardware and software that complies with the federal government's IPv6 testing process.

IPv6 features an expanded addressing scheme that can support billions of devices connected directly to the Internet. But IPv6 is not backward compatible with IPv4, which is running out of addresses. Network operators can either support both protocols in what's called dual-stack mode or translate between IPv4 and IPv6, which could add latency and overhead cost.

5. Europe will run out of IPv4 addresses.

The European regional Internet registry — RIPE — is expected to run out of IPv4 addresses in 2012. Geoff Huston, adjunct research fellow at the Centre for Advanced Internet Architectures at Swinburne University of Technology, estimates that RIPE will run out of its remaining IPv4 address space on July 22.

In April 2011, Asia depleted all of its IPv4 address space except a small fraction held in reserve for startup network operators. The North American registry is expected to deplete its IPv4 address space in 2013.

The depletion of IPv4 addresses in various regions of the world will put more pressure on U.S. carriers and enterprises to begin transitioning their networks to IPv6. For example, Comcast has said it will offer production-quality IPv6 services across its nationwide network in 2012. ■

Tech event in March

IT Roadmap Chicago will be returning to the Donald E. Stevens Convention Center on March 21. IT Roadmap is a regional one-day technology event that features a full-day conference program, and an exposition hall with leading technology providers. **tinyurl.com/82g6mp9**

Extreme CEO: New products in 2012

After years of stagnant or lackluster growth, Extreme Networks tapped Oscar Rodriguez to bring new life to the switch maker in 2010. He scrutinized global operations, streamlined the product line and brought a new focus that he says will really come through this spring with a new wave of switches. Rodriguez shared his goals for Extreme in 2012 with *Network World* Editor in Chief John Dix and Managing Editor Jim Duffy. This is an edited version of the interview; for a full transcript go to: tinyurl.com/6lhntxo.

What's at the top of your priority list for 2012?
The first set of goals is to get our products out the door. They're due in the early spring and I believe that they will be on time with no issues. The second set of goals is to make sure that all of our salespeople are trained to be experts. One of the things that we're also doing is revamping our salesforce, not only retraining the internal folks but adding people from the outside. I'm looking for really great salespeople that want to have a lot of upside. We can bring people on board that have a Rolodex and we can train them to be the black belts in data centers. We're shaping ourselves to be that kind of vendor.

What do you see as your major challenges in 2012 as you build upon what you accomplished in 2011?
Customer perception — making sure that we drive our customer perception as quickly as we possibly can. The more that we build customer awareness of our products, the sooner you get into the game, the better off you are. The other thing is having the denser boxes. You lower the power consumption per port, you make the network physically smaller so you're using less racks to run the same size of network. With our BlackDiamond X8 you can fit nearly 2,300 10G ports in a rack. That's unheard of — nobody can do that.

So if you're a cloud guy, you want the network to be as small as possible, use up the least amount of room, because that way you have more racks for servers, more racks for virtual machines, more racks for storage, and that, in essence is what you sell — you sell virtual machines and you sell storage. That maximizes your revenue out of the same facility size, and lowers your overhead. So we have to make it as small as possible and as quiet as possible so that these cloud guys can pay attention to the important things, which is driving more revenue and driving more virtual machine space.

Is some of that to say that you're advocating for flatter networks like a lot of the other guys do as well?
It's got to be flat, you've got to reduce the numbers of tiers. The old multi-tier way of doing this doesn't work. You've got to be able to have active-active switching. You've got to be able to have multi-path capability. What it does is it lowers the number of tiers, makes things highly redundant and fault tolerant, and if you can then put it in a nice, dense package, you've got an advantage for a cloud operator that's unheard of.

Juniper is out there talking about the need for single-layered — not even two-tier stuff — but do you go that far? Or do you think two tiers will suffice for many customers?
Yeah, the BlackDiamond can do one tier, and because it's so dense, we can do one tier with a single box. The way Juniper has done things, they've said, "OK, do all these multiple boxes, we can make it look like one tier." The problem is, now you're locked in to Juniper. So I kind of look at Juniper like the way Bose has done their audio system — very high fidelity, no doubt about it, but you've got to cable your house differently than everybody else does. You don't want to do that non-standard cabling because now you're stuck. You're always going to buy a Bose system no matter what.

With Foundry being sucked up into Brocade, does that simplify your life or complicate it?
It's better for us. It simplifies our life, because I think Foundry was a very good executing company, to be frank. Bobby Johnson ran a really good company. He in essence ran a very customer-focused company and as a result of that they were really a very vehement competitor. When I look at the acquisition by Brocade, it's taken them awhile to get everything integrated. They're a good competitor now — don't get me wrong, I'm not throwing a stone over there — but I think that anyone who is going through the transition of old technology to new technology gets slowed down to a certain extent. I look at Fibre Channel as the TDM of storage. When you're trying to balance the current with the future, it's a lot harder, and I think I like that better from a competitive standpoint.

As you focus on data center cloud fabrics going into 2012, are there any pieces that are missing right now that you need to have in order to fulfill that mission?
One thing I think is very important is policy management and networks. We've had the luxury in the networking industry for many years to just throw more bandwidth at the problem. As soon as anything got congested, just throw more bandwidth. As soon as you needed to have mission-critical information, add another switch. If you needed to have quality-of-service issues, you could just give it tons of bandwidth and it will resolve itself.

It's getting to the point where, thanks to applications that are coming from the mobility side, every iPad and every Android [device] is going to have a different set of applications per user and so the traffic is no longer predictable. You've got to have policy that's applied that is based on the criteria of what we should be allowed to do on the network, the types of resources we should be allowed to access, the kind of bandwidth and quality of service that we need to have, and that needs to go all the way back into the data center.

We're going to see quite a bit of policy management start to be required and necessary, in addition to security management inside the data center for intra-data center productivity between applications and VMs, and the network has a big part to play there. ■

IT pros offer network tips

BY ELLEN MESSMER

SCHOOLS ARE for learning, and the information technology and security professionals who support networks and applications in the nation's K-12 and university systems are discovering new tactics in what can be challenging IT environments. Here we talk to four professionals in the education realm to get a sense for their top IT issues and what they do to handle them.

Do vulnerability-assessment on software before you buy it.

That's the philosophy adopted at West Virginia University, which increasingly is asking software vendors to agree to submit their products to a vulnerability-assessment examination before it's purchased. "It's part of the contract process," says Alex Jalso, assistant director of information security at WVU, which uses the IBM AppScan Enterprise software vulnerability-assessment tool to analyze and remediate code vulnerabilities and weaknesses.

Jalso says the analysis process lets the school look deeper into code, which is the intellectual property of the vendor, and for its part the school agrees to work under nondisclosure about any issues that arise. The university hasn't yet gotten all its software vendors on board, but it's headed in that direction. And AppScan is also used by the university to analyze any security weaknesses in the in-house developed Web applications before they go into production. Why is this important? Jalso says it's about being pro-active in identifying software weaknesses that might otherwise become a route for attack by hackers and malware.

There are a lot of legal issues to consider, too, such as not violating data-protection guidelines related to HIPAA, FERPA and PCI rules. The basic idea is it's not too much to ask for vendors to prove their software can pass a vulnerability test — if fact, pass it not once, but again and again as the code base changes, Jalso says.

Change vendors — not your expectations.

Ross Elliott is manager of network operations at Brick Township Public Schools in New Jersey, a district with 12 schools and 10,000 students. The IT department for the school district provides wired and wireless access for students and faculty. But earlier this year, the more open portion of the wireless network showed signs of strain with so many students using it for Internet access. As a side effect, the Astaro firewall and the Comcast service "were not playing together well," says Elliott, who thinks the firewall's proxy-based setup was likely a factor but "we were upset at the support we were receiving."

Network availability was getting shakier and on Elliott's birthday in June, the wireless network was limping along at its dismal worst and "in the IT department, we were getting bombarded with phone calls." The school system was able to sort out the network issues over the summer, upgrading speed and switching to a SonicWall firewall. Elliott says more changes may be needed to the nature of network access at the school to meet the demands of mobile devices.

In another case where a decision was made to switch, New York City-based Columbia Grammar and Preparatory School, which supports about 450 Apple Macintosh computers for use in classrooms, had not been happy with the performance of its Apple servers over a considerable period. So it switched to Windows servers over the past summer, which has shown better performance than the Apple servers in support of the Macintosh computers, according to Adam Gerson, co-director of technology at the independent college prep school. Though he's a self-professed "Mac lover" at a "Mac school," he didn't let that stop him from trying something other than Apple for servers.

Fix it frugally.

Like many school systems in the country today, teachers are doing more routine procedures online rather than with paper, and that's the case at Belchertown School District in Massachusetts, which consists of five schools. There, teachers and students go online to get class material and log attendance, among other things. An application called PowerSchool is configured with Cisco UCS running VMware virtual-desktop VMware View connected to data stores residing on NetApp FAS2020 storage. But according to Scott Karen, the school district's director of technology, it became apparent last year that there were excessive latency issues with the desktop virtual-machine setup when many students tried to log on and use the system at the same time. In addition, teachers in their classrooms all taking attendance at the same time found the system not only slow but leading to file errors.

The lack of caching in the older NetApp FAS 2020 was a problem, Karen says, but he adds that going to a bigger and newer NetApp was not appealing from the school district's budgetary standpoint. However, as a regular attendee at the local VMware user group meetings, where problems are shared and, yes, vendors show up to pitch their wares, Karen found what he says was an economical fix for the school district's VM boot storm problems. And that was adding the Avere FXT Series two-node cluster to optimize the read/write capabilities of the system. It was up and going quickly, brought latency to a tolerable point, and it all was a lesson learned about desktop virtualization. ■

Hadoop solidified for production duty

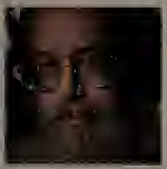
BY JOAB JACKSON, IDG NEWS SERVICE

AFTER NEARLY seven years of development and fine tuning, the Apache Hadoop data processing framework is finally ready for full production use, the developers of the software announced last week.

The project team behind Apache Hadoop has released version 1.0 of their platform. "Users can be much more confident that this release will be supported by the open source community," says Apache Hadoop Vice President Arun Murthy. "There is no more confusion over which version of Hadoop to use for which feature."

Three new additions in particular helped make this release worthy of the 1.0 designation, Murthy says. End-to-end security is the chief feature. Hadoop can now be secured across an entire network, using the Kerberos network authentication protocol. As a result, enterprises can now trust their Hadoop deployments with sensitive and personal data. The second feature, the webhdfs REST (representational state transfer) API , can be used to interact with Hadoop using Web technologies that many administrators and programmers easily understand. Finally, this version is the first to fully run HBase, which gives administrators a familiar relational database-like structure to store their data.

Lucene developer Doug Cutting, along with Mike Cafarella, created Hadoop in



NETINSIDER | BY SCOTT BRADNER

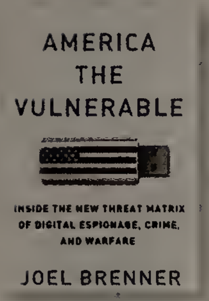
Is vulnerability an objective?

I ENDED last year with a death-of-the-Internet column, and I'm starting off the new year with a death-via-the-Internet one.

I read "America the Vulnerable" by Joel Brenner. I recommend this to anyone who does not mind a few sleepless nights.

Brenner served as the head of counterintelligence for the director of National Intelligence so he has reason to actually know what kind of threats the United States is under but, due to his previous government position, he is limited in what he can say to information already made public. Thus, he needed to provide public documentation to back up what he wanted to write about, and the book has 38 pages of references of that documentation. I shudder to think of what Brenner knows about active threats that he was not able to write about.

No doubt about it, we are exposed. Data about us as individuals is everywhere and totally out of our control; critical corporate data is wide open to everyone in the corporation, and too frequently, just to everyone; ISPs ignore compromised customer computers; utilities put the controls for their key systems directly on the Internet "protected" by security systems that would embarrass a maker of windup toys; the "best" security companies around have been breached and information about, or protecting, tens of thousands of their customers has been stolen; and our economic and political adversaries are getting good at exploiting these conditions.


AMERICA
THE
VULNERABLE
INSIDE THE NEW THREAT MATRIX OF DIGITAL ESPIONAGE, CRIME, AND WARFARE
JOEL BRENNER

Brenner details all of the above issues in great, and frightening, detail and includes some suggestions as to what government could do to mitigate some of the issues:

- ISPs generally know when their customers' computers get infected and become botnet slaves, yet almost never let customers know they are toasted. Maybe ISPs should be required to let them in on the secret.
- Electric utilities put the controllers for their power generators, most of which have laughable security protections, directly on the Internet because it is convenient for their technicians. Of course, it is also convenient for remote hackers who might like to install software that could destroy the generators when it's convenient for the hackers. Brenner lays out an all-too-feasible scenario of a future where a Chinese government blackmails the United States by destroying a few power generators as a demonstration of what it could do. Maybe it should be against the law, with criminal penalties, to connect such controls to the Internet.
- Why does just about everyone in your organization have direct access to just about all the company secret files? There is no reason that the person in the mailroom or, in most cases, the company president, should have such access. Take a look at WikiLeaks to see what goes wrong when there is too indiscriminate access.

The basic message of "America the Vulnerable" is that we are, almost willfully, handing over our secrets, economy and future to those who would do us harm. There are things we, as a country, as employees and as individuals should do to reduce the threats but we better get a move on or it will be too late. (It is too late in many cases, including with the technology used to quiet submarine propellers.)

Disclaimer: I had the privilege of attending a Harvard seminar with Mr. Brenner but the above book review, and situational report, is mine — not the university's. ■

Bradner is Harvard University's technology security officer. He can be reached at sob@sobco.com.

2005 as an implementation of Google's MapReduce algorithm, a technique for analyzing data spread out across many different servers. Cutting would later go on to work for Yahoo to help the portal company use the technology to aid in its search service, an implementation that was eventually spread across over 40,000 servers.

> **"Users can be much more confident that this release will be supported by the open source community.**
> **ARUN MURTHY,** VICE PRESIDENT, APACHE HADOOP

Hadoop can be used to store and analyze large data sets, often called big data. Although originally designed for aiding large search services, the technology is increasingly finding a home within enterprises as well, Murthy says. The project has at least 35 code committers, and hundreds of other contributors. ■

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Power-efficient servers could get a shot in ARM

BY AGAM SHAH, IDG NEWS SERVICE

IN 2012 a fundamental change in server architecture could be on tap as companies look to cut data center costs with the help of technologies like ARM processors and graphics chips, analysts say.

Low-power processors from companies like ARM could be in full use in data centers by 2013, and mixing them up with graphics chips could bring massive performance improvements and power savings, analysts say. Experiments around implementing ARM processors in servers are already underway, and graphics chips are already being used in some of the world's fastest supercomputers.

Power efficiency has been among the top determining factors in server purchases as customers keep costs in mind while deploying applications, analysts say. Last year, there was a spike in the build-out of cloud and high-performance servers around the hyperscale model, in which servers are densely packed to cut power consumption while scaling performance. For further power savings, companies in the future could consider using servers with low-power ARM processors, which are used in most tablets and smartphones today.

"Customers are experimenting with a lot of different technologies. They are trying to gain efficiency," says Jed Scaramella, research manager at IDC. Companies are measuring dollars-per-kilowatt and dollars-per-square-foot, and in servers measuring performance-per-watt more closely than ever.

The growth of the cloud is partly driving server sales, with many companies building out public and private clouds. Many two-socket x86 servers were purchased for cloud implementations around the hyperscale model, which allows new servers to be easily plugged in to scale performance. Servers in the hyperscale model are also being used for applications such as analytics and business intelligence.

"They're not disposable, but they are aimed at a low-cost point. It's really about energy efficiency ... and how fast you can scale them," Scaramella says.

Dense servers with ARM processors could be an alternative to x86-based technology in the coming years as IT managers factor in density and lower-power requirements. Analysts have said that a congregation of low-power ARM processors could provide more power-efficient processing of cloud transactions than traditional x86 server chips like Intel's Xeon or Advanced Micro Devices' Opteron, which are more power hungry. The chips based on ARM processors would however lag x86 chips on data-intensive tasks such as database and ERP (enterprise resource planning).

Some companies last year introduced experimental servers with ARM processors. Hewlett-Packard in November announced server designs with a chip from Calxeda, which includes a quad-core ARM processor and consumes as little as 1.5 watts of power. Nvidia in November said a supercomputer was being built in Barcelona around its Tegra 3 chip, which has a quad-core ARM CPU, and that the Tegra 3 chips were being paired with discrete graphics processors to speed up scientific and math calculations.

"What happened [in 2011] is you started to see the road maps and products. It became 'real' but that doesn't mean it's going to gain market share next year," Scaramella says.

A break in traditional server architecture with ARM will be closely watched, but the impact will be felt in 2013 at the earliest, says Dan Olds, principal analyst at Gabriel Consulting Group. Almost every major server maker could be experimenting with ARM processors, Olds says.

"If it's real enough for an HP to give it a shot, that means it's real," Olds says. "It depends upon what you think about the 64-bit road map for ARM."

Current ARM processors only support 32-bit addressing and also have limited error correction features. With 64-bit, computers can address larger amounts of storage and memory, which is beneficial for data-intensive applications. ARM in late October introduced its first 64-bit microprocessor architecture, ARMv8, aiming it at devices ranging from sensors to high-end servers.

The idea of coupling graphics processors with ARM processors is also fascinating, Olds says. Graphics processors are being used on many of the world's fastest supercomputers, and are capable of much faster performance at running some applications than traditional CPUs.

"Such a combination would offer much higher density, more computations per watt and lower cost," Olds says.

Graphics processors are trickling down from high-performance computers and are being used increasingly for high-performance computing in the energy, pharmaceutical and financial services, media and other industries, Olds says.

But analysts agree that switching from x86 to ARM could be a challenge due to the hardware and software issues. Customers are already struggling with decisions on purchases with many server options available, including workload-optimized systems that bundle the server, storage, networking and software. Switching to ARM could be disruptive and have its benefits, but it may take time to implement.

"It's a journey; it's not happening overnight," IDC's Scaramella says.

Purdue University CIO Gerry McCartney echoes that belief, saying the university has a lot invested in its current IT infrastructure. The university largely relies on x86 servers, and a lot of the code used by researchers is written for the x86 instruction set.

"Researchers do not want to change software," McCartney says. He says an effort many years ago to move from x86 to another architecture didn't pan out, and a lot of thought would go into switching over to a new architecture.

But the university likely won't move away from x86 because Intel's server chips are becoming increasingly power-efficient, McCartney says. As an example, Purdue's Carter supercomputer, which ranks 54th on the world's Top 500 list of the world's fastest supercomputers, provides more performance-per-watt than four supercomputers with Intel chips bought over the last four years.

"I could get rid of the four previous machines, and use a quarter of the power that they are currently now consuming," McCartney says. The performance-power ratio on Intel chips is improving with every new chipset, he says. ■

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ART BY SAM BOSMA

Mobility,

OUTLOOK 2012

cloud, analytics to reshape IT in 2012

BY ANN BEDNARZ

DESPITE SOME HOPEFUL FITS AND STARTS, THE U.S. ECONOMY DIDN'T escape the doldrums in 2011. Unemployment remained stubbornly high, the U.S. debt-ceiling crisis and budget scuffles spurred more economic uncertainty, and Europe's ongoing financial problems threatened global markets. If there's an upside, at least this is all familiar territory.

"Back in 2008, nobody knew what was going to happen as a result of the global financial crisis and IT spending almost stopped overnight," says Richard Gordon, a research vice president at Gartner. "We're not in that kind of situation now. The solutions to the problems [in the U.S. and Europe] are understood and known. The question is now, is there a political way to execute and make them happen?"

Against the worrisome economic backdrop, enterprises have continued to spend on IT, albeit with caution. IT budgets grew in 2011, but not by much when the impact of exchange rates is factored in.

"If you look at constant dollars — in other words, if you strip out exchange rates — we've seen marginal growth in 2011 in the very low single digits, maybe 1% or 2% globally," Gordon says. Healthier growth in emerging economies compensated for sluggish growth in the U.S. and Europe, but the net effect is essentially flat IT spending in 2011 compared to 2010.

We'll see more of the same in 2012, Gordon says. "From an enterprise IT perspective, folks are planning for a period of slow economic growth."

Research firm IDC is more bullish, estimating that worldwide IT spending will grow 6.9% year over year to $1.8 trillion in 2012. A healthy chunk of spending — as much as 20%, IDC says — will be driven by a handful of technologies that are reshaping the IT industry: smartphones, media tablets, mobile networks, social networking and big data analytics.

Mobility is introducing significant management and security headaches for IT, while at the same time enabling the business to increase employee productivity and improve customer service. Social networking is spawning a treasure trove of customer data, but also creating an enormous challenge for companies that want to make any sense of all that data.

FIGHTING FOR TALENT

As companies try to balance the technical challenges and opportunities, they're also grappling with a shortage of skilled professionals. IT pros with application development, virtualization or cloud computing skills are in short supply, as are those with business analytics expertise.

The number of available IT jobs in the U.S. is up about 12% compared to a year ago, and demand for tech professionals is expected to get even stronger in 2012, according to Dice.com. When the jobs site surveyed 1,200 IT hiring managers and recruiters, 65% said they're planning to add tech pros in the first half of 2012. Among those in hiring mode, 27% said they plan to expand headcount by more than 20%.

Tech pros with in-demand skills and relevant experience aren't having trouble finding jobs, says Jack Cullen, president of IT staffing at recruiting firm Modis. "If candidates have strong skills, robust backgrounds, and they communicate well, they're getting snapped up fast," he says. In fact, many hiring managers haven't adjusted to the new pace. "They're still slow to react, still very deliberate in the hiring cycle," Cullen says. "They're really looking for that quality hire."

Cars.com, a pricing and reviews site for online car shoppers, has been on an IT hiring spree for the past year and remains bullish as 2012 kicks off and the hard-hit automotive industry's recovery continues.

"We're optimistic," says CIO Bill Swislow. "We suffered in the recession just like everyone else, but the auto industry has been rebounding. Even though we're still not close to pre-recession levels of auto sales, the incremental climb in sales has been pretty steady."

As a result, Cars.com has been investing heavily in IT. "In 2010 and 2011 we made substantial investments. We increased headcount, increased overall IT spending and executed a number of different strategic initiatives and infrastructure upgrades," Swislow says.

That growth will continue in 2012, he says, though he won't be increasing headcount by as much as he did in 2011, when his IT team grew by about 30%. Swislow is predicting about 10% growth in headcount for 2012.

On the project front, Cars.com is planning a handful of major projects in 2012, including re-engineering its CRM and fulfillment systems, deploying a new data warehouse platform and rolling out new business intelligence technologies.

"There's an increasing market expectation with our customers, especially car dealers, that they can log in to a tool and see real-time metrics. Our current data warehouse architecture requires an overnight batch process, and we want to load continuously throughout the day," Swislow says. "On the business intelligence layer, we're looking to greatly upgrade our visualization and dashboard capabilities, both for internal use and for customer-facing reporting."

Successful execution of some major IT projects over the last couple of years — in particular shifting from a waterfall to an agile development methodology, which dramatically increased developer productivity — makes it easier to justify further increases in headcount and IT budgets, Swislow says. "Our ability to spend effectively enables us to make a credible case for spending more."

KEEPING IT LEAN

Not all enterprises are staffing up and spending more, however. Many organizations are still struggling to pare back expenses.

IT headcount and budgets are remaining flat in the city of Ridgeland, Miss. "We're still cautious," says Joe Kirchner, information systems manager for the city. "We're taking care of the essentials, and there's beginning to be some optimism."

A key project for 2012 will be to extend a VoIP rollout. Ridgeland analyzed its VoIP options for several years before starting to deploy the technology at City Hall and the Police Department. Beginning in January, more city departments, including the Fire Department, will be brought on board.

Further out, Ridgeland is researching its options for a virtual desktop deployment, though the purchase won't happen in 2012, Kirchner says. "We have a lot of legacy applications that communicate in a unique way, so you can't rush to everything."

The city of Ridgeland is replacing IT staff who leave, but it's not adding new positions. Nucleus Research says it's seeing more of that: IT departments putting money into technology rather than more personnel. Among the ROI-driven case studies Nucleus published in 2011, 60% said they were able to reduce or avoid adding staff as a benefit of

HOW YOUR MOBILE INTERFACE WILL MORPH IN 2012

BY JOHN COX

The mobile user interface is set for a range of changes in the next 12-24 months, creating new modes for users to interact with their devices, and with other devices nearby and network-based services. Touch will be improved through higher screen resolutions, brighter screens, the start of tactile feedback ("haptics") when you press a button. Users will "recognize" content faster and interact more accurately and quickly, says Paul Erickson, analyst with IMS Research, Austin, Texas, who recently released the "Next Gen User Interface Report."

These changes will make touch much more accurate for users, says Ken Dulaney, vice president of mobile at Gartner. "The problem is that you sometimes touch 'in between' and greater accuracy can determine what you meant to press. Also, better algorithms would help you be sure you see the character you meant to press."

Touch today is mainly individual presses to buttons or areas on the screen, with some limited gestures. But gestures will expand, in two ways. In one change, touch-screen gestures will become a continuous movement of one or more fingers on the screen. Swype, a company acquired by Nuance, lets you press a finger to a keyboard and slide it from one letter to another to spell words in a text message. A predictive algorithm figures out which letters to include and which to ignore.

A second type of gesture support eventually will make use of mobile device cameras to recognize and interpret a range of physical motions by the user. The basic technology appears in products like Microsoft Kinect, released a year ago as a $150 add-on for the Xbox gaming consoles: Users can flick through menus by waving their hands, for example. Microsoft now plans to introduce it for Windows PCs, and last year bought Canesta, which designs chips that work with a device's digital camera to let the device "see" in three dimensions.

The user's voice interaction with a mobile device also will continue to improve and expand. Apple's Siri, a "voice assistant" introduced with iOS 5 for the iPhone 4S, gives a wide range of voice-activated control and management features (Android and Windows Phone have their own capabilities or apps for similar tasks).

But Apple gave Siri a "personality," which "gives the interaction a softer, humorous feel," says Matt Revis, vice president of product marketing and management for Nuance's mobile group. The original Siri, later acquired by Apple, used the Nuance voice engine. Nuance also offers Dragon Go!, an iPhone app that enables Internet searching by voice.

MIT's Virtuoso Mixer is composed of a three-tiered rotating carousel that encourages cooks to experiment with food combinations. It is equipped with thermoelectric heating and cooling elements and an insulated glass cover to quickly bake and modify food temperatures.

technology investments.

"With uncertainty about what corporate taxes are going to look like in 2012, and what unemployment is going to look like, companies are opting to invest in technology that makes their existing employees more productive," says Rebecca Wettemann, vice president of research at the firm.

KNOW THY CUSTOMER AND BUSINESS

Enterprises are deploying technologies that can help them improve customer service, analyze data for better decision-making and get the most out of their workforce.

Companies have continued to spend on CRM, even during the recession, because it's important for businesses to know their customers — to be able to identify and retain the customers who generate profit for the company, to cut loose the ones who don't and to track new customers who are willing to spend, Wettemann says. "For every dollar you spend on CRM, you get $5.60 back."

Analytics technology is hot because it enables businesses to make decisions based on data instead of gut, and it doesn't require an enormous IT outlay. "We've seen companies make a relatively small investment, do a pilot analytics project, understand how the technology works, and see what it delivers in terms of returns," Wettemann says.

In upstate New York, analytics are helping cash-strapped school districts to track academic performance trends and identify students who are most likely to benefit from targeted education services.

Nicole Catapano is data analysis coordinator at the Washington-Saratoga-Warren-Hamilton-Essex Board of Cooperative Educational Services (WSWHE BOCES), which serves 31 school districts in a five-county New York region. WSWHE BOCES manages and analyzes volumes of school data from different districts, customizing projects based on each district's needs.

"We're taking the burden of organization and analytics away from the school districts and helping them pinpoint where they should focus their time and attention regarding student achievement," Catapano explains. "For one group we looked to see what variables predicted student readiness for college classes. In another district, we looked at early literacy indicators to see what skills students had or were lacking in order to be demonstrating a level of proficiency by third grade."

Catapano's team invested in predictive analytics software from IBM, which has significantly shortened the amount of time it takes to create a predictive model from weeks or even months to just days or hours.

CLOUDY FORECAST

Cloud computing is another area of accelerated growth as 2012 gets underway. The shift from traditional IT acquisition models to public cloud services is still in the early stages but growing at a much faster rate (19% annually through 2015) than overall enterprise IT spending, according to Gartner.

The appeal of the cloud, with its potential to reduce capital expenses and enable greater IT agility, is proving strong enough to convince companies to entrust their data to a cloud provider. More than 50% of the world's largest companies will have stored customer-sensitive data in the public cloud by year-end 2016, Gartner predicts. Under pressure to reduce costs and operate more efficiently, more than 20% of organizations are already selectively storing customer-sensitive data in a hybrid cloud environment, Gartner says.

Cars.com has adopted some software-as-a-service apps, and this year is implementing a cloud-based desktop backup solution. So far, it has resisted outsourcing its Web infrastructure to a cloud provider, though the appeal of a service that can handle extreme spikes in traffic (such as when Cars.com advertises during the Super Bowl) is tempting, Swislow says.

In the financial services industry, the current economic environment and regulatory climate are driving firms that traditionally would have built and maintained their own trading infrastructures, and procured market data on their own, to consider outsourcing those functions to a provider such as NYSE Technologies, the tech division of NYSE Euronext.

"People are going to have to make painful decisions" as financial organizations work to cut costs, trim IT budgets and staff and transform their operating models, says Stanley Young, CEO of NYSE Technologies.

"The natural tendency for all companies is to do everything themselves. Trusting somebody to provide a critical part of your infrastructure is a tough decision. But I think they've reached a tipping point where doing the same things they've always done is no longer an option."

MOBILE, SOCIAL MAYHEM

Two complementary trends — the meteoric adoption of the mobile devices and the increasing use of personal smartphones and tablets for business purposes — are further disrupting the IT status quo and driving new investments.

Enterprises are grappling with how to incorporate employees' mobile devices into existing corporate technology infrastructures. The city of Ridgeland, Miss., is so far prohibiting employees from using personal devices to access internal systems. Limited personnel is one reason, Kirchner says, along with the management and security challenges that employee-owned devices introduce.

Digirad, a maker of cameras used for medical purposes, allows employee-owned iPhones and iPads at work, but limits their application access. "We're only trying to support email," says Jon Martin, vice president of IT at Digirad. "And the users can't contact us for advice. We say, 'check with your provider.'"

A recent survey by the Enterprise Device Alliance found that 66% of organizations allow some employees to bring their own devices, which IT supports at least to some degree. But while employee-owned devices are showing up at work, many IT organizations are under-investing in tools to manage and secure those devices. Just 16% of organizations reported using mobile device management tools — a percentage expected to more than triple to 50% by year-end 2012.

There's a similar tug-of-war going on in the social media realm.

Sales and marketing teams want to engage customers through social networking sites, end users want to access personal accounts from the workplace, and HR wants to be able to recruit, hire and retain social media-savvy employees. But IT doesn't want to expose the company to unnecessary risk.

In a recent Ponemon Institute survey, 63% of respondents said use of social media puts the organization at risk, and 52% said their organizations suffered increased virus and malware attacks as a result of employees' use of social media. Yet only 29% have security controls in place to mitigate or reduce the risk.

Looking ahead, industry watchers say organizations will adopt enterprise tools that bundle compliance, content management and analytics features so companies can stay on top of content created by employees and measure the effectiveness of their social media activities.

In the big picture, enterprises aren't waiting around for the economy to improve. IT executives are spending in new areas and dramatically rethinking how they acquire technology and deliver services to end users. After a period of unrelenting focus on cost-cutting, these course adjustments are a breath of fresh air. ■

SAM BOSMA

BY BRAD REED

WAVE OF INFLUENCE

BYODs and their mobile apps need to be managed

Workers bringing their own devices to work was one of the biggest challenges IT departments faced in 2011 ... and in 2010 ... and in 2009 as well. And guess what? It's going to be one of the biggest challenges in 2012, too.

And now that the Kindle Fire has made Android tablets more popular, IT departments can only expect to see a wider array of new devices coming to work in the coming months. Forrester Research analyst Christian Kane says this variety of new devices is leading some companies to rethink how they manage mobility in the enterprise by managing access instead of devices.

"In general, there's a concept right now that you should start managing the user rather than managing the device," he says. "So you should understand that workers can use one type of device at home and another type at work but you'll still give them access to the applications they need."

What this means for users, says Kane, is that the company will let them bring any device they want to work but it won't take responsibility for repairing that device if it gets broken or replacing it if it gets lost. Rather, the job of the enterprise will be to provision access to certain applications that users need on their phones and to ensure that enterprise applications are effectively walled off from whatever other applications that users may download onto their own devices.

"Apps need to be controlled and monitored because they're the single biggest source for malware and security breaches," says Dan Croft, the CEO of wireless administrative services provider Mission Critical Wireless. "I know there are all kinds of cool apps that people want to download. But once you download an app to a tablet you need to be confident that the app isn't going to be conducting activities that could hurt the company."

There are a couple of ways that companies can get a handle on this, both of which will

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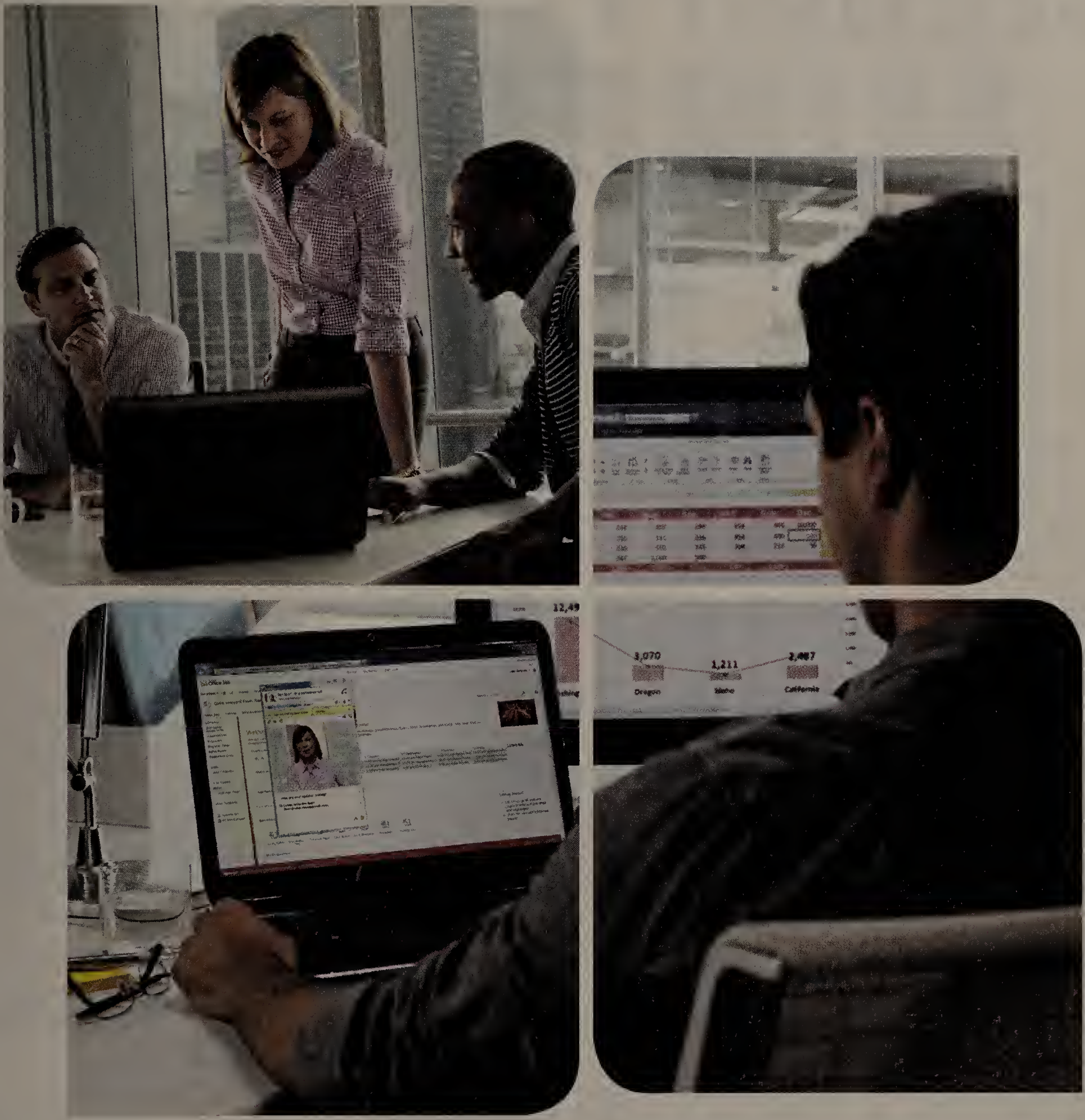
Microsoft



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SECURITY MINEFIELD

BY ELLEN MESSMER

Mobile devices, virtualized environments bring fresh challenges

The rapid adoption of the newest mobile devices — especially the Apple iPhone and iPad and the Google Android-based equivalents — will be a huge disruptive force in enterprise security this year. Not only will there be pressure to decide how to protect and manage these devices, which are growing as malware targets, but the complexity of this task is magnified many times over because companies are allowing employees to use their own personal smartphones and tablets for business purposes — what's sometimes called "bring your own device" (BYOD).

And if that weren't enough, 2012 is likely to be the year when information-technology managers will be forced to come to grips with the security consequences of their own decisions to virtualize their networks, which has widely impacted servers and may also radically transform traditional desktop environments. But virtualization architectures are giving rise to the need for new types of security controls and options that must be weighed in the context of the network use. And decisions to link virtualized environments to cloud-based services also mean coming to grips with new security considerations.

"One of the biggest challenges for companies is moving into the cloud space and virtualizing a lot of the products they use," says Lenin Aboagyue, principal security architect at Apollo Group, which owns and operates the University of Phoenix and other higher-education institutions where providing a wide array of high-bandwidth applications used for online learning is paramount.

Security controls such as data-loss prevention, anti-malware, encryption and intrusion-prevention shouldn't be forsaken in the quest to virtualize and link into cloud platforms, he says. In the hybrid virtualized environment Apollo Group is growing, Aboagyue says there's a need to constantly assess how security vendors or cloud services support virtualization-oriented security.

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As IT hiring rises, CIOs will find it harder to replace retiring baby boomers and retain 20-somethings

JUMPING SHIP

BY CAROLYN DUFFY MARSAN

SAM BOSMA

IT staff retention is shaping up to be one of the biggest challenges facing CIOs in 2012.

Three trends are bringing this issue to the forefront:

- Corporate IT hiring is on the rise, tempting IT professionals with higher pay and opportunities for advancement if they switch companies.
- Younger techies change jobs frequently, averaging only a year or two in a position before switching.
- Baby boomers are reaching retirement age, with an average of 10,000 U.S. citizens turning 65 on a daily basis for the next 18 years.

IT staff turnover is "probably my most significant issue right now and has been for the past 12 to 15 months," says Louis Trebino, CIO and senior vice president at the Harry Fox Agency (HFA), a New York City-based provider of rights management, licensing and royalty services for the music industry.

Trebino says he has a loyal staff of developers working on core applications who have been with the company for five to 15 years. But he is experiencing a significant amount of turnover among Java developers, who are staying for a year or less. The turnover on his Web development team is making it harder for HFA to change its business model as the music industry migrates online.

"Without having experienced resources — even nine to 12 months with the company and knowing a bit about our business — it elongates my delivery time," Trebino says. "It puts us in a really uncomfortable position to have this kind of turnover because knowledge keeps walking out the door. We invest in training people and bringing them up to speed to where they need to be, and boom, they're gone. That has been my biggest struggle and concern."

IT staff turnover is rebounding from its lowest point in a decade. In 2010, only 3% of IT workers left their jobs voluntarily. In 2011, IT staff turnover jumped to 5%, Gartner says.

Lily Mok, research vice president at Gartner, says CIOs need to evaluate their staff and figure out which personnel are critical to the IT department's success because of their skills and experience and make sure those people feel valued.

"You need to know who is leaving and why they are leaving," Mok says. "Even if you have 1% turnover, that might be too much if these 1% are in critical roles and have critical skills."

Job opportunities for IT professionals are expected to remain plentiful in 2012, leading to more opportunities for key employees to leave.

Job postings "are up 12% year-over-year in November, and November is a pretty slow month," says Alice Hill, managing director of the Dice.com IT job website. "We think things are going to stay steady in 2012. We don't expect a slowdown. The tech unemployment rate is 4.1%, so it's a pretty good climate for IT."

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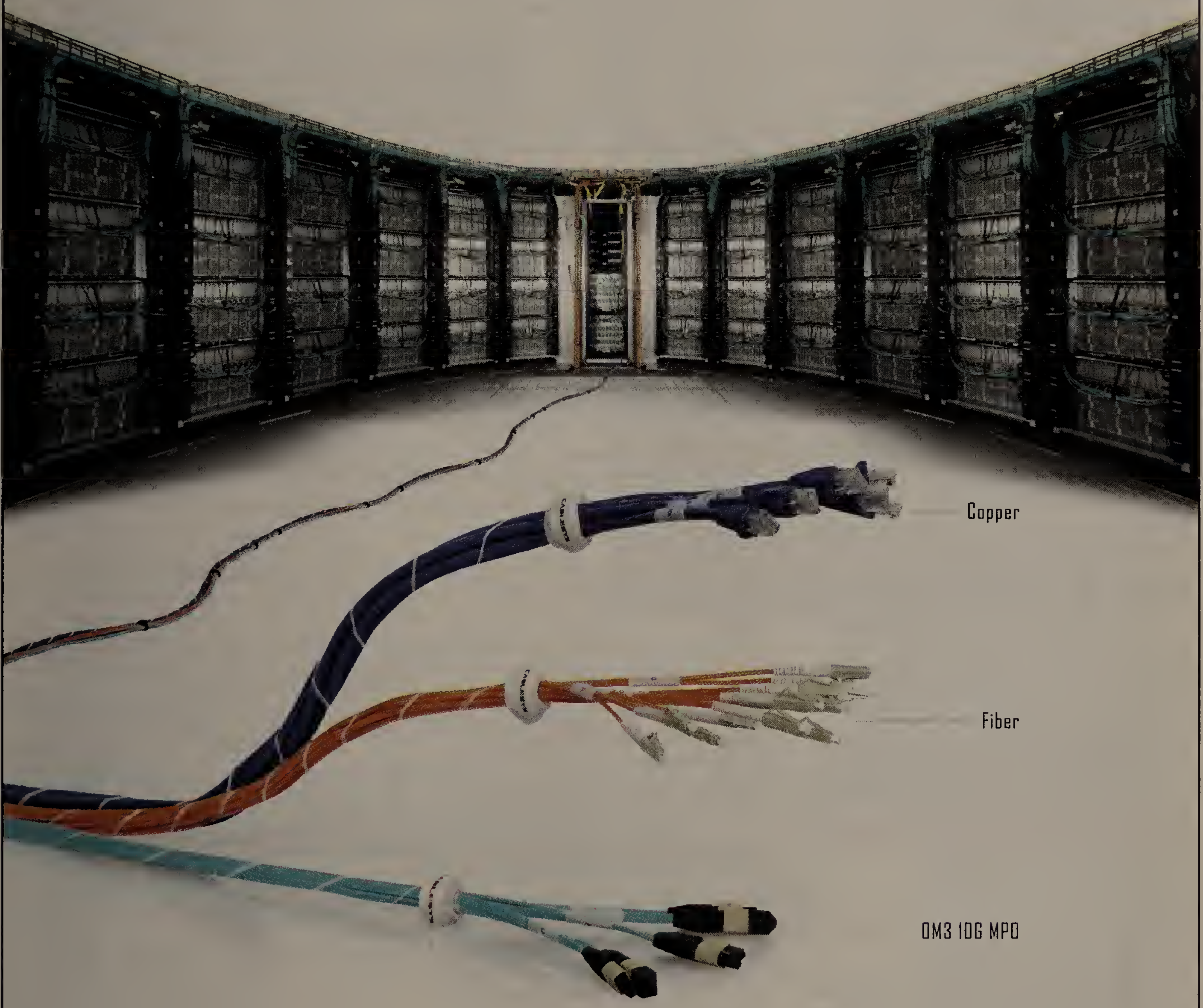
CABLESYS



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require some investment. The first way is for companies to build up their own private clouds to exclusively handle data used by enterprise apps. SAP CIO Oliver Bussmann says that private clouds will give companies the ability to effectively segregate sensitive data while still ensuring that workers have easy access to it on their mobile devices.

"A lot of companies are grappling with how to provide access to sharing for documents across all mobile and desktop platforms because there's a challenge right now if everything can be moved to a public cloud," he says. "So you need to find a solution that provides that kind of functionality in your own private cloud. With mobile device management software, for instance, we now have the opportunity to block users from putting documents onto iCloud or other public clouds."

Companies also could simply build their own mobile app stores that workers can use to get all approved applications for company use. This can ensure that companies can preapprove popular apps for users and thus know exactly what apps have access to their corporate network. And as Mission Control Wireless' Croft notes, companies will want to keep their workers using their own app stores by offering a wide array of popular games and non-work apps so that you create a "user-friendly environment to have apps that can be fun and not just business apps." In other words, companies should expect to support Angry Birds and Fruit Ninja on their company stores along with mission-critical productivity apps.

The second big way for companies to protect their data across multiple device types and platforms is to make sure the data itself knows where it does and doesn't belong. Gartner analyst Ken Dulaney says companies should consider using digital rights management (DRM) techniques to tag data so that it will automatically delete itself if it's sent to a place where it could be copied or stolen. So if a worker accidentally uploads a sensitive document onto iCloud instead of the company's private cloud, the document will automatically destroy itself as soon as it recognizes it's been placed in iCloud.

"You use DRM techniques to arm the data to know where it is and what to do when it's in someplace it doesn't belong," Dulaney explains. "The data has to become smart, it has to say, 'I'm in a room that doesn't look like a normal office room and I'm going to delete myself.'"

The bottom line, though, is that companies will continue facing major challenges with workers bringing their own devices to work and it's likely to remain a hot topic for IT departments heading into 2013 as well. The good news, says Forrester's Kane, is that companies are increasingly investing in the sorts of tools that will allow users to take more responsibility for managing their own devices, thus freeing up IT departments to work on more valuable tasks that don't involve baby-sitting users who leave their iPhones in bars late at night.

"Many companies are transitioning to bring-your-own-device programs that let users access enterprise app stores, that give them the responsibility of wiping their own devices when they get lost, and that let them interact with their co-workers in company-sanctioned forums to discuss the best apps to use," he says. "It's become a shared responsibility and it has to be managed that way." ■

> Today there are over 500 [malware samples] for Android alone. **But next year there will be even more, thousands more.**

CONTINUED FROM **PAGE 22**

Meanwhile, the smartphone/tablet and BYOD trend is shaping up as an inescapable security challenge as known malware samples for the new generation of devices are now starting to pile up, especially for Android.

"Today there are over 500 pieces for Android alone," says Patrik Runald, senior manager for security research at Websense. "But next year there will be even more, thousands more." He notes that the Apple iOS platform, because of its design, appears more secure for now at least, but the basic problem of mobile device management (MDM) — and the BYOD issue — has to be addressed. "How are you going to provision these?" Runald asks. "How would you lock down the phone?"

In the Ponemon Institute's recent State of the Endpoint study, a survey of 688 information and security managers, 17% said more than 75% of employees in their organizations already use their personal devices in the workplace, and 20% said more than half did. A quarter said they use MDM of some kind today and 45% indicated that would increase in the next 12 months. ■

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In a December survey of 1,200 IT hiring managers, Dice.com found that 65% will add IT professionals in the first half of 2012 and a significant number — 27% — plan to expand their IT workforce by more than 20%. Most employers are looking for IT workers with six to 10 years of experience, followed by workers with two to five years of experience.

IT professionals are showing a newfound willingness to switch jobs, experts say.

"Salaries were flat throughout this whole recession," Hill says. IT professionals "are doing more with less, having to do all the work for the people who weren't hired. This has created the climate for people wanting to look around."

Dice.com is reporting IT shortages in many states, including California, New Jersey, Texas and New York. Demand also is outstripping supply for IT professionals with skills and experience in mobile application development, virtualization and cloud computing.

The shortage of IT professionals will get worse as baby boomers retire, especially in the government sector.

Gartner's Mok recommends that CIOs compile a workforce plan two or three years into the future, including the most critical roles, the demographics of the people in those roles, and the risk to the organization if those people leave. She says CIOs should make an effort to have baby boomers transfer their knowledge to younger staff before they retire.

"How many organizations do formal workforce planning? Less than one-third," Mok says. "It's not just about IT staff skills and retention, but it's about the overall long-term ability of IT to deliver the service and the quality of the service that the business needs."

All is not lost for CIOs with limited IT budgets who want to retain their staff. Studies have shown that IT professionals are willing to take a pay cut for a flexible schedule, including work-from-home arrangements.

"There are opportunities around retention when you offer a more modern workplace," Hill says. "Webcams are cheap. You can very inexpensively set up a virtual workforce and give people a day or two a week to work from home. ... This plays well with younger people, who want to do more on handhelds and more from home. They're not into a 9-to-5 scenario." ■

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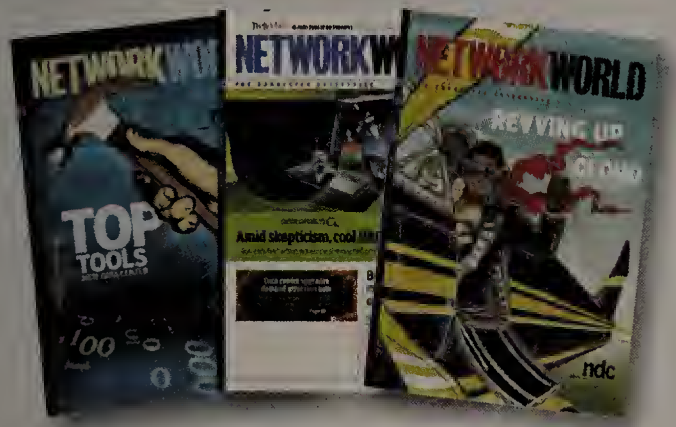

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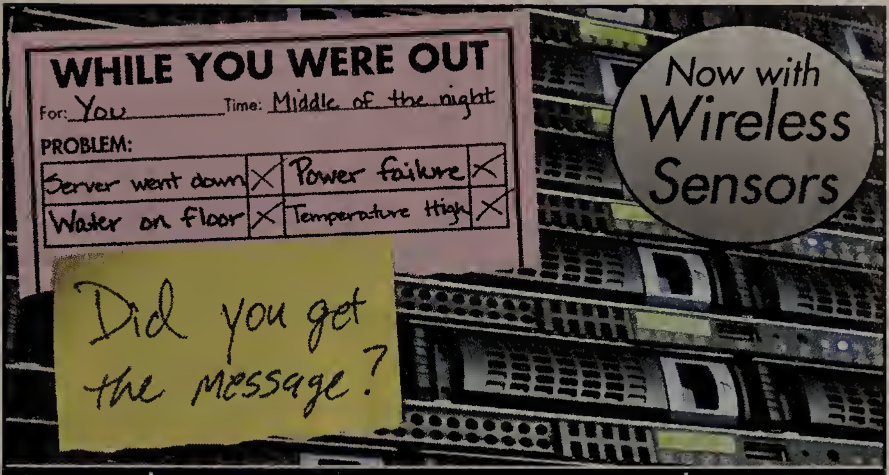
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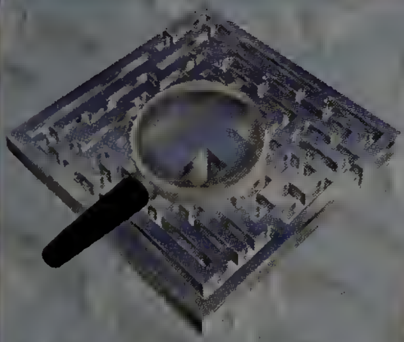

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VIRTUAL DESKTOPS SET SAIL

BY TIM GREENE

Days of tactical deployments of virtualization are done; be strategic

AS budgets are locked in for 2012 it's time to aggressively expand server virtualization, and for those who have been held back by cost, to consider virtual desktops.

It just makes sense to continue consolidation of servers. Most of the largest businesses already have done so, but the lower tiers have a way to go to reap the unmistakable cost benefits by boosting server utilization, getting more work out of fewer machines and saving operational costs including electricity.

So far, many businesses have virtualized less than a third of their physical servers, according to VMware. Gartner says 40% of servers overall have been virtualized, but that the penetration will grow to 75% in 2015 and it's for more than just costs; virtualization is a strategic asset that can improve business efficiency.

This strategy will include pooling resources into private clouds that can be supplemented by pay-per-use service-provider clouds when the need arises — so-called "cloud bursting," says Jeremy Burton, EMC's chief marketing officer.

That will lead to more efficiency. "Let's say you're a retailer who 11 months out of the year might be able to use their own data center to do things," says Joe Weinman, segment executive for HP and founder of cloudonomics.com, "but then for one month wants to be able to double or triple or quadruple capacity." Bursting eliminates the need for resources that sit idle most of the time.

It can mean better service levels that IT departments offer to their end users, too. Businesses have access to all the compute and storage they need via cloud providers, he says.

Businesses need to forge alliances with these cloud providers. To work well, private virtual infrastructure must be compatible with those in the provider's network. Businesses need to do the legwork to identify which providers make the best fit. Someday that may not be a worry, but it is now.

Service providers are trying to help. "A key trend in service providers is a shift to support better interoperability with existing enterprise virtualization infrastructures," Gartner says in its virtualization Magic Quadrant report. "In many cases, expanding their support for the same technologies that enterprises are using."

More businesses will seriously consider desktop virtualization infrastructure because the cost of implementing VDI will drop. In particular, keep an eye on Citrix and its bold claim that it will get the price of desktop virtualization below that of deploying a traditional desktop — something that will prompt more businesses into seriously considering VDI.

Citrix says chip vendors will produce its system-on-a-chip that eliminates the multiple chips otherwise needed to support zero-client VDI endpoints, making them less expensive. The chip is optimized to boost performance of these devices and to make optimal use of available bandwidth, the company says.

Texas Instruments and NComputing helped design the chip, and NComputing says it will base a zero-client product on the chip in 2012.

"It takes cost off the table as a hindrance," says Citrix's Wes Wasson, the company's chief marketing officer.

The key thing businesses need to do is make a plan on how they're going to move from the virtualization they have to the new architectures it supports such as private, public and hybrid clouds, says Edwin Yuen, Microsoft's director of cloud and virtualization strategy. "How do you take virtualization to the next step?" he says.

Create a detailed plan that can manage all the elements of virtualization and cloud so businesses can focus on how to maximize application performance, he says. ■

Outlook 2012

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FLAT NETWORKS TURN THE TIDE

Real-world implementations driven by 10G servers, 40G networks will emerge

BY JIM DUFFY

There was a considerable amount of activity in the data center/cloud switching fabric arena in 2011. That is expected to continue in 2012, along with real-world implementations of the next-generation IT technologies.

First, a quick review of what went down in fabric switching in 2011: Early in the year, Juniper launched its much anticipated QFabric switches, borne of the multiyear Project Stratus effort. In the spring, Cisco expanded its own FabricPath strategy with enhancements that extend it end-to-end, from the server network interface card to the network core — among them, multihop Fibre Channel over Ethernet (FCoE) on its Nexus 7000 core data center switch.

Word leaked out that Cisco's also working on a fabric switch line, based on merchant silicon, under the codename "Jawbreaker." Brocade announced its CloudPlex architecture, which depends on the company's VDX fabric switches and Fibre Channel SAN switches. HP unveiled its FlexNetwork architecture, which seeks to unite data center, campus and branch networking on the same switching fabric.

Arista endorsed a fabric plan based largely on stable industry standards instead of proprietary technology, and extended its low-latency switch line to support it. Enterasys, Extreme, Avaya and Alcatel-Lucent all enhanced their own fabric visions with new switches, software or both; and proposed fabric standards like TRILL and Shortest Path Bridging continued to gestate, even though a clear industry fissure was forming on which is more suited to the task.

Upstart Xsigo rolled out software designed to link all the servers in a data center virtually, allowing IT managers to reconfigure virtual machines and other resources without carrying out traditional networking tasks. And some software startups, like Infinetics, claimed they had a better fabric mousetrap than any of them.

Most of this activity is intended to "flatten" the data center network by removing extraneous tiers of switching and facilitate more "east-west" flow of traffic between server racks, rather than "north-south" to the core and back. This, in turn, will reduce latency, proponents say.

So what's on tap for 2012? Plenty, according to industry players.

Fabrics advances made in 2011 will be implemented in enterprise and service provider networks in 2012. Products announced last year will ship; 10G on server motherboards will be commonplace; expect to see more 40G Ethernet announced, shipped and installed; and virtualization will spread.

"Increased virtualization ratios are driving more increased capacities at the edge," says Shehzad Merchant, senior director of strategy for Extreme. "10G at the edge is going to really, really pick up and we're expecting 10G LAN-on-a-motherboard by early next year. Which means servers will ship with 10G by default. So when the edge goes to 10G, your core is going to 40G. 2012 will be a big year for 40G."

And fabrics will be as diverse as the organizations that implement them. Despite the standards under development, one fabric size does not fit all, according to Dell.

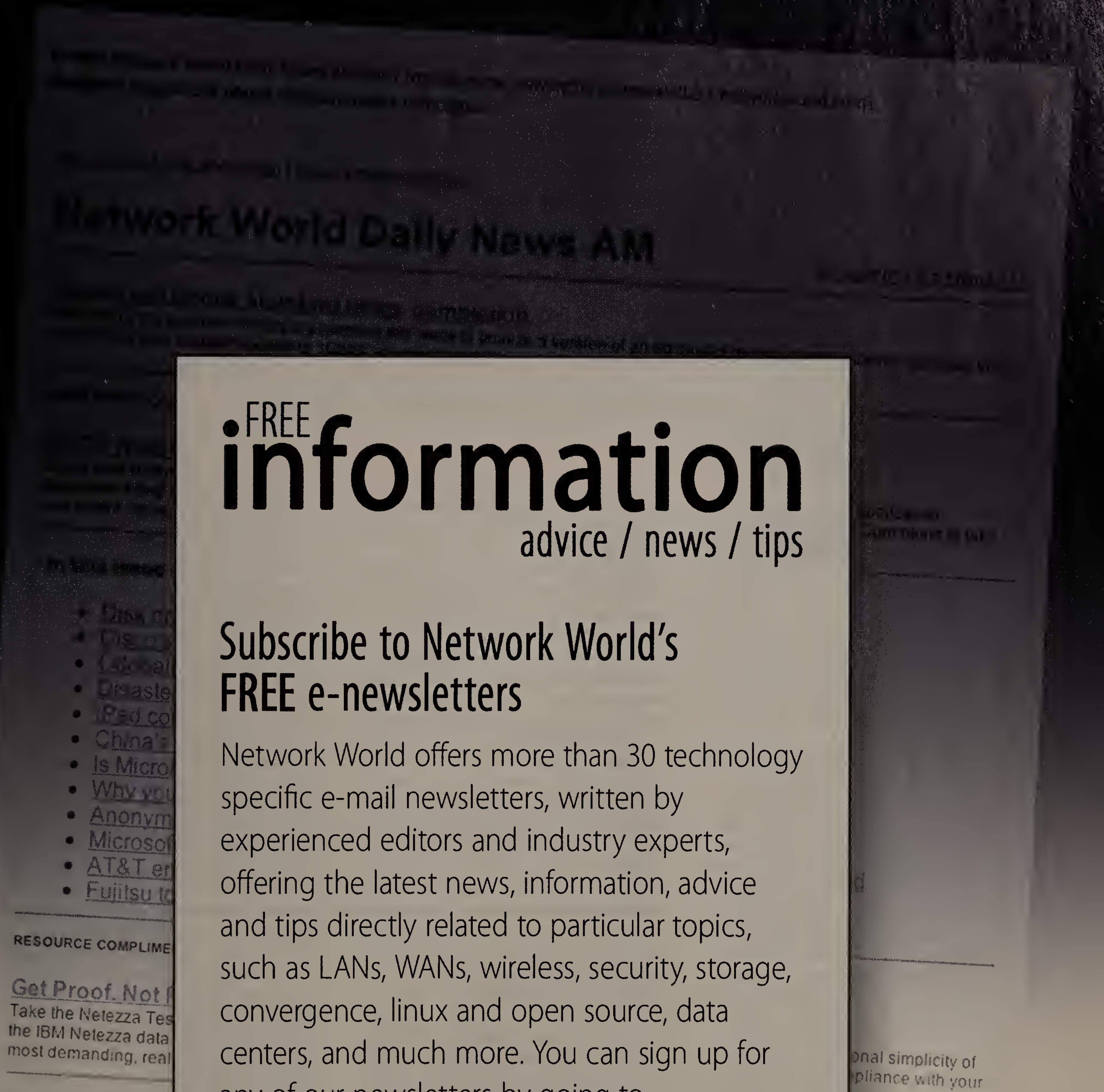
"We believe there is not one answer here from a fabric perspective," says Arpit Joshipura, executive director in Dell's Networking group. Dell acquired data center switch maker Force10 Networks earlier this year. Some users will continue to implement a three-tier architecture, some a two-tier, others will shoot for a single switching tier; some will centralize their core, others will distribute it; some will implement FCoE to converge data and storage traffic, others will keep Fibre Channel and Ethernet separate and distinct.

"Going into 2012, all the stuff we talked about in 2011 will ramp up," Joshipura says. "We also see another disruption with the 10G servers coming out, it makes a perfect combination of 10G servers and 40G fabrics."

Joshipura also sees further IT automation coming next year, with one-click provisioning of bare metal servers and switches and VLANs, open scripting, virtual machine mobility, and so on.

"You need a layer of automation to manage it in real time and a layer of management for provisioning and setting it up," he says.

And investment in data center and cloud fabric startups will continue, and perhaps increase, in 2012. Venture capital firm Greylock Partners has investments in five data center companies right now, including Delphix in database virtualization and Pure Storage in enterprise data center flash arrays. ■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CLOUD ACTIVITY TO EXPLODE

Key growth areas include asset management, security monitoring, cloud service brokering and service stacks

BY TOM HENDERSON

In testing cloud computing services and observing the growth of cloud activities, we've noticed that there are distinct phases that organizations go through in adopting cloud.

First, application developers fall in love with cloud-based disposable infrastructure and/or ready-built app development platforms that circumvent long purchasing cycles and capital asset growth limitations. Then other attractions, like commodity rentable infrastructure, or expansive platforms, become attractive. Sometimes applications are either extended to the cloud as private growth areas, or moved totally off-premise.

In 2012, the number of cloud hosting service providers is likely to increase dramatically to meet demand in these areas. But security and reliability/SLA worries must be assuaged, and that will continue to spawn not only management application makeovers, but also new, cloud-based services for both cloud and on-premise resources and assets.

Along with the standard cloud offering of infrastructure as a service and platform as a service, varieties and gradients of value-added services, especially services surrounding administration, active security and migration services will grow proportionately.

We tested products that perform security in a number of diverse ways, including personal identity management, the perennial one-click logon management, but also numerous applications that provide cloud-based monitoring of both cloud and on-premise resources. We expect the number of packages in these categories to climb.

Products that add intelligence to security monitoring, such as syslog managers, will increase in number as well as products that monitor assets.

Asset monitoring has become more difficult because of the addition of more and diverse mobile assets, especially smartphones — and tablets are right behind. We reviewed several mobile device management (MDM) applications, and found that the convenience of cloud-based controls seemed to trump on-premise asset tracking and policy application.

We see the trend toward cloud-based MDM growing meteorically, and users will interact with MDM applications in more direct ways as the trend toward organizationally sanctioned application stores or resources will grow. The rationale is the desire to vet the security and privacy compliance of applications used by employees on smartphones and tablets, and to contain costs that are negotiated in bulk, rather than in retail quantities for users.

In the same vein, as MDM applications increase their dominion over mobile assets, the scope is likely to expand toward "internal" fixed-location assets, such as desktops, servers and peripherals. This means that best-of-breed applications now running in the cloud will connect with more assets for control, then offer overall audit responsibility for compliance and regulatory control. This segment explodes.

Similarly, we see a trend toward combinations of MDM as well as identity management in applications. Microsoft's System Center is an example of an unreleased but announced product meeting this trend, but it also has competition that's lighter on its feet on the horizon.

Managed services organizations will be an increasing broker of cloud "stack services" that allow rapid application development and deployment for persistent applications, while on the other hand offering stack allegiances with various industry initiatives, like OpenStack. Tools that leverage development frameworks and platforms also will increase, brokered by MSO/MSPs to deliver more comprehensive solutions.

These offerings will include desktop as a service (DaaS), which lets especially tablet devices become "full members" in application deployment schemes. MSPs and other hosting organizations will offer an increasingly diverse set of Internet log-ons to walled-garden applications utilizing various administrative and management schemes. The DaaS goal will be to use any kind of device to access applications uniformly via the Internet. Smartcard and bio-authentication devices for multiple-factor authentication to DaaS services will also grow as dictionary attacks and sniffing tools become an onerous crack in security.

The final bit of growth in cloud in 2012 is likely to arrive in the form of education, and standardized education leading to credentialization for cloud implementations. Cloud is becoming a large enough concept with sufficiently different applications to become a discipline in and of itself — apart or augmented with data center principles. ■

A BIG CLOUD The battle for enterprise cloud dominance will grab a lot of attention in 2012 with established players like IBM, Microsoft and Oracle facing serious challenges from Amazon, Google, Salesforce.com and VMware. As evidence of this challenge, IDC expects Amazon Web Services to exceed $1 billion in cloud services business in 2012 with Google's Enterprise business to follow within 18 months.

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Periodical postage paid at Framingham, Mass., and additional mailing offices. Posted under Canadian International Publication agreement #PM40063731. Network World (ISSN 0887-7661) is published twice monthly except for monthly in July by Network World, Inc., 492 Old Connecticut Path, P.O. Box 9002, Framingham, MA 01701-9002. **Network World** is distributed free of charge in the U.S. to qualified management or professionals. To apply for a free subscription, go to www.subscribenw.com or write Network World at the address below. No subscriptions accepted without complete identification of subscriber's name, job function, company or organization. Based on the information supplied, the publisher reserves the right to reject non-qualified requests. Subscriptions: 1-877-701-2228. Nonqualified subscribers: $5.00 a copy; U.S.—$129 a year; Canada—$160.50 (including 7% GST, GST#126659952); Central & South America—$150 a year (surface mail); all other countries—$300 a year (airmail service). Digital annual subscription rate of $29.00. Four weeks notice is required for change of address. Allow six weeks for new subscription service to begin. Please include mailing label from front cover of the publication. Network World can be purchased on 35mm microfilm through University Microfilm Int., Periodical Entry Dept., 300 Zebb Road, Ann Arbor, Mich. 48106. **PHOTOCOPYRIGHTS:** Permission to photocopy for internal or personal use or the internal or personal use of specific clients is granted by Network World, Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3.00 per copy of the article, plus 50 cents per page is paid to Copyright Clearance Center, 27 Congress Street, Salem, Mass. 01970. **POSTMASTER:** Send Change of Address to Network World, P.O. Box 3090, Northbrook, IL 60065. Canadian Postmaster: Please return undeliverable copy to PO Box 1632, Windsor, Ontario N9A7C9. Copyright 2009 by Network World, Inc. All rights reserved. Reproduction of material appearing in Network World is forbidden without written permission. Reprints (minimum 500 copies) and permission to reprint may be purchased from The YGS Group at (800) 290-5460, ext 100, or networkworld@theygsgroup.com. USPS735-730

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BACKSPIN

2012 OUTLOOK

The end of everything?

BY MARK GIBBS

Welcome to 2012, the year the world ends. Yes, in case you haven't been following the eschatologists out there (and most of them are definitely "out there"), 2012 will be "it" for humanity. The "last hurrah." Fini. Au revoir.

For example, if you are an adherent of the theory that the Mayan calendar accurately forecasts the Big One, then you will be waiting for Dec. 21, 2012, the date predicted for humanity's lights to go out.

While I very much doubt that doom and destruction will occur on that day, who knows? Clearly Harold Egbert Camping, the 90-year-old radio evangelist who repeatedly forecast the rapture over the course of 2011 (with a naught for two score for the year) has shown that he's not really au fait with the predictions biz (he has since retired). Even so, should the rest of the doom predictors be correct, we should probably put off our next round of Christmas shopping until Dec. 22 just in case.

So, that was 2011. So what of 2012?

- **ANNOYING STUFF:** Botnets, malware, hackers, distributed DoS attacks, spam, phishing ... just more of the same junk we've dealt with for years but an order or two magnitude worse. Several large financial organizations will suffer serious hacker break-ins and the details of millions of consumer accounts will be exposed. Business will simply carry on as usual.
- **ANALYTICS:** All organizations will dig deeper into their data to understand the hows and whys of consumer behavior. Along with this will go ...
- **BIG DATA:** The theory and practice of mining enormous data sets will continue to be explored and used for commercial purposes as companies try to identify consumer trends and find subtle correlations between consumers and their behaviors.
- **CLOUD:** In 2012 even bigger than it was in 2011, and, from an enterprise viewpoint, even more problematic when it comes to security.
- **THE ANALYTICS BACKLASH:** The results of the fields of analytics and big data will start to really creep people out over 2012 and, while consumers will complain about privacy issues, nothing will be done because of the big money involved in being able to sell more, predict fraud, evaluate credit worthiness, and so on.
- **THE CONSUMERIZATION OF IT:** This trend is unstoppable and will evolve quickly over 2012 to become a fact of life for IT in every organization. The security headaches will become much worse and IT will have to jump on this if they want to minimize risk and costs.
- **SOCIAL NETWORKING:** We're reaching a plateau of market penetration because there are only so many consumers and each one can only manage so many accounts. Even so, social networks will become more vital sources of consumer behavioral data. Facebook's IPO will be huge but the share price will eventually slump as the market realizes that there's not much of a business model.
- **HACKTIVISM:** Activism by hacker groups such as Anonymous was significant in 2011, and in 2012 hacktivism will have a huge impact on the online presence of both government and big business. A significant amount of the action will be by hackers working for foreign governments.
- **NET NEUTRALITY:** Despite the FCC's rules that mandate "hands off" wired services, the ISPs will keep trying to run their networks as they want and will come up with cunning ways to argue that they are, in fact, playing the game.
- **FINALLY,** my big prediction for 2012 stands a maybe 80% chance of coming to pass and is also somewhat eschatological, but rather than predicting the end of the world I'm predicting the end of the Internet ... at least, the Internet as we know it.

Over 2011 we've watched the to-ing and fro-ing of the bills Stop Online Piracy Act (SOPA) and the PROTECT IP Act (PIPA). The bills were introduced, argued against, appeared to be dropped, and got picked up again. SOPA will be back before the House Judiciary Committee when Congress returns from its winter recess, and if SOPA/PIPA becomes law it will be the beginning of the legally sanctioned censorship of the 'Net. While it won't be the end of everything, it will be the end of everything that's good about the 'Net.

For IT and the Internet, 2012 is going to be a mixed bag much as 2011 was but the big difference will be that stakes will be that much higher.

This is an edited version of Gibbs' column. Go online to tinyurl.com/7gypnpn for a full blast.

Gibbs polishes his crystal ball in Ventura, Calif. Your prognostications to backspin@gibbs.com.

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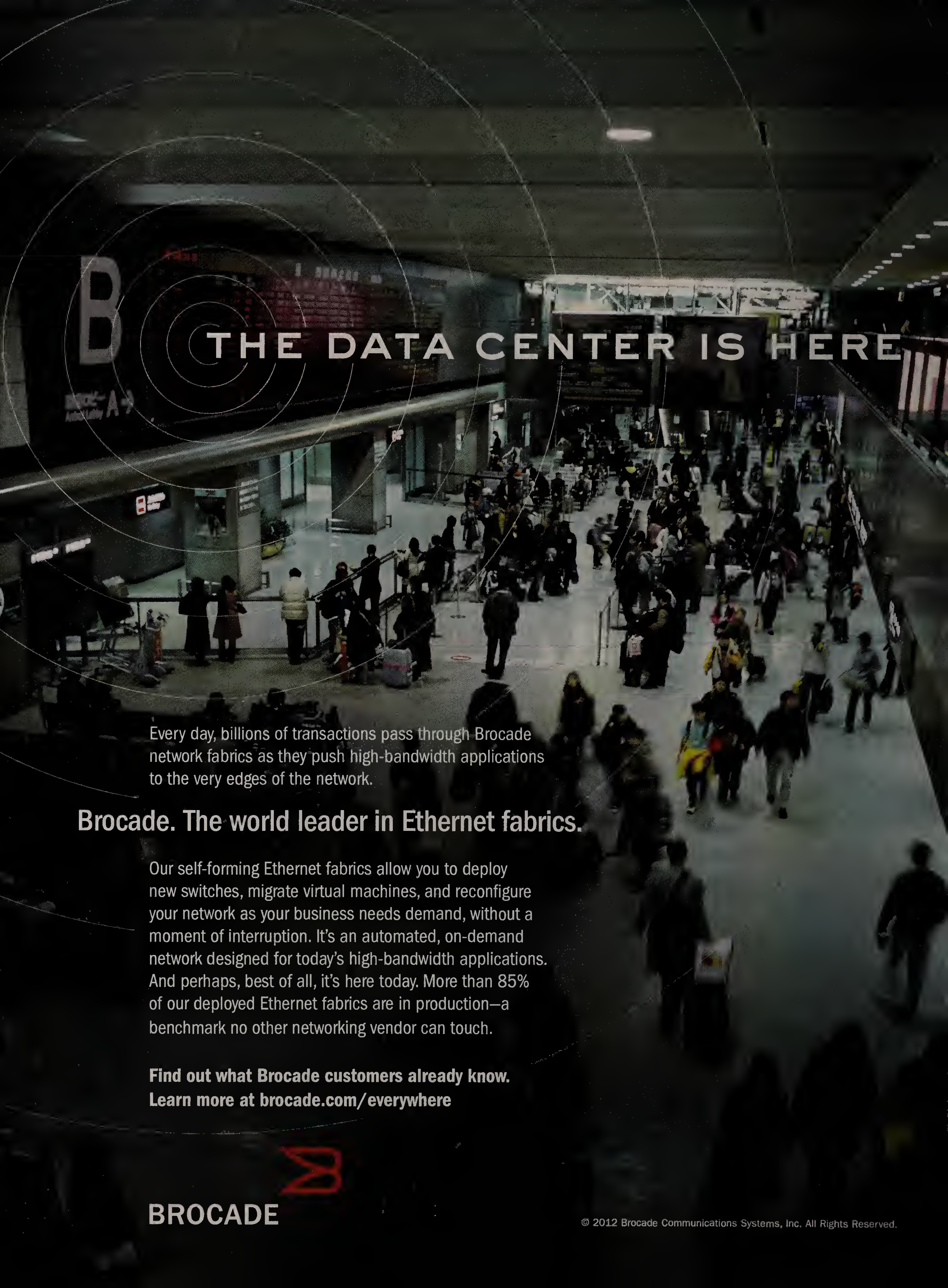

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